Seasonal Climate Watch

November 2020 to March 2021

Date issued: November 6, 2020

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in a La Niña state and the forecast indicates that it will most likely remain and strengthen towards a strong La Niña state during mid- and late-summer. With this strong likelihood of a strong La Niña during mid-summer, there are increased chances of above-normal rainfall in the summer rainfall areas during the summer season.

The multi-model rainfall forecast for early-summer (Nov-Dec-Jan), mid-summer (Dec-Jan-Feb) and late-summer (Jan-Feb-Mar) all indicate increased chances of above-normal rainfall over the summer rainfall areas, with a notable exception of parts of KwaZulu-Natal, which indicate increased chances of below-normal rainfall during mid- and late-summer.

The north-eastern parts of the country is expected to experience below-normal minimum temperatures, while the rest of South Africa are expected to experience above-normal minimum temperatures. The maximum temperatures however are expected to be below-normal for most parts of the country during the summer seasons.

The South African Weather Service will continue to monitor and provide updates on any future assessments that may provide more clarity on the current expectations for the coming seasons.

2. South African Weather Service Prediction System

2.1. Ocean-Atmosphere Global Climate Model

The South African Weather Service (SAWS) is currently recognised by the World Meteorological Organization (WMO) as the Global Producing Centre (GPC) for Long-Range Forecasts (LRF). This is owing to its local numerical modelling efforts which involve coupling of both the atmosphere and ocean components to form a fully-interactive coupled modelling system, named the SAWS Coupled Model (SCM), the first of its kind in both South Africa and the region. Below are the first season (November-December-January) predictions for rainfall (Figure 1) and average temperature (Figure 2).

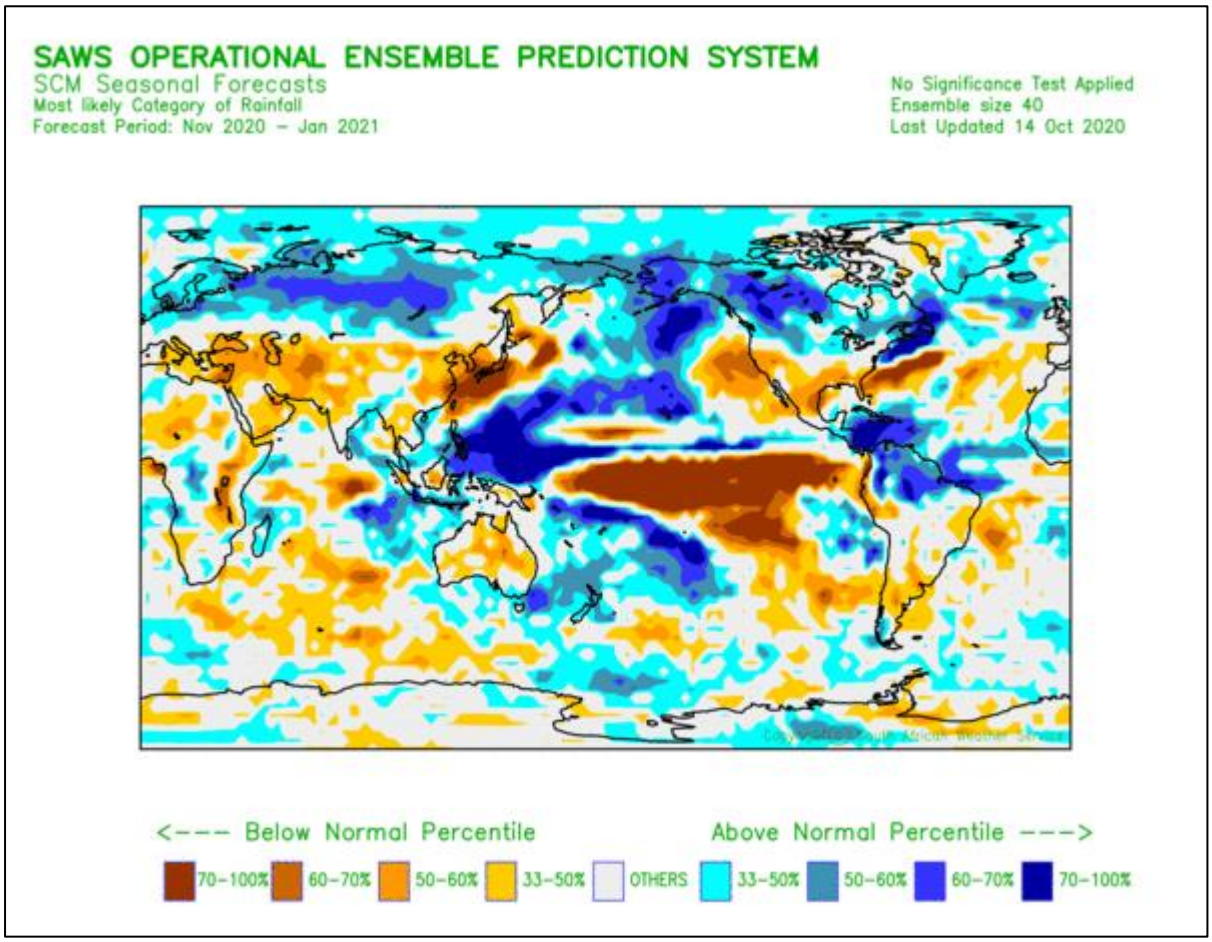

Figure 1: November-December-January global prediction for total rainfall probabilities.

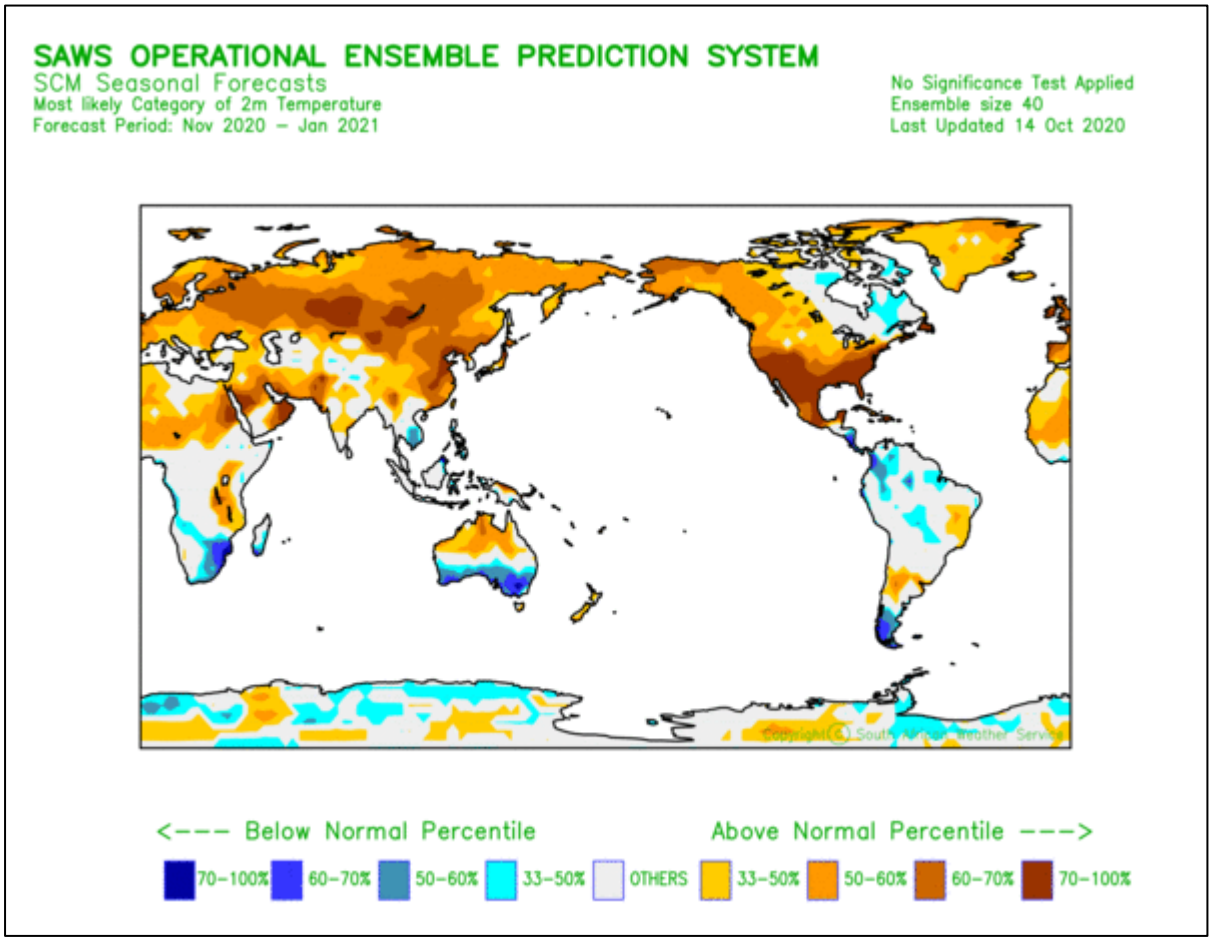

Figure 2: November-December-January global prediction for average temperature probabilities.

2.2. Seasonal Forecasts for South Africa from the SAWS OAGCM

The above mentioned global forecasting system's forecasts are combined with the NOAA-GFDL and NOAA-GFDL A06 systems (part of the North American Multi-Model Ensemble System) for South Africa, as issued with the October 2020 initial conditions, and are presented below for South Africa.

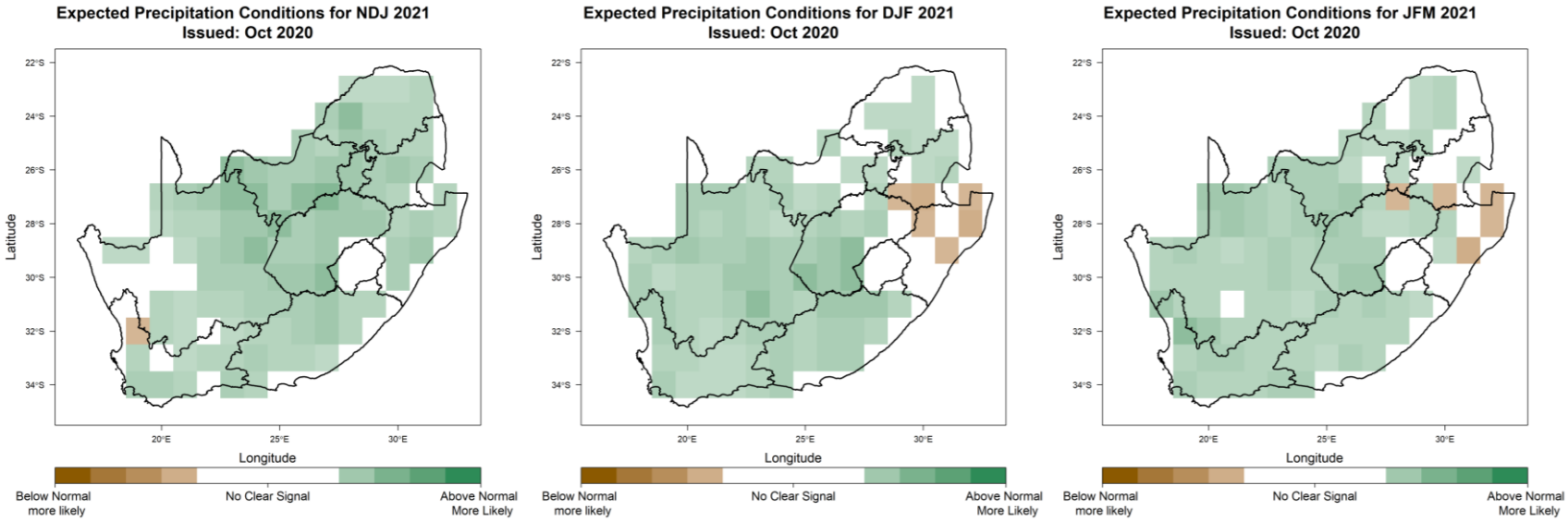

Figure 3: *November-December-January 2021 (NDJ; left), December-January-February 2021 (DJF; middle), January-February-March 2021 (JFM; right) seasonal precipitation prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

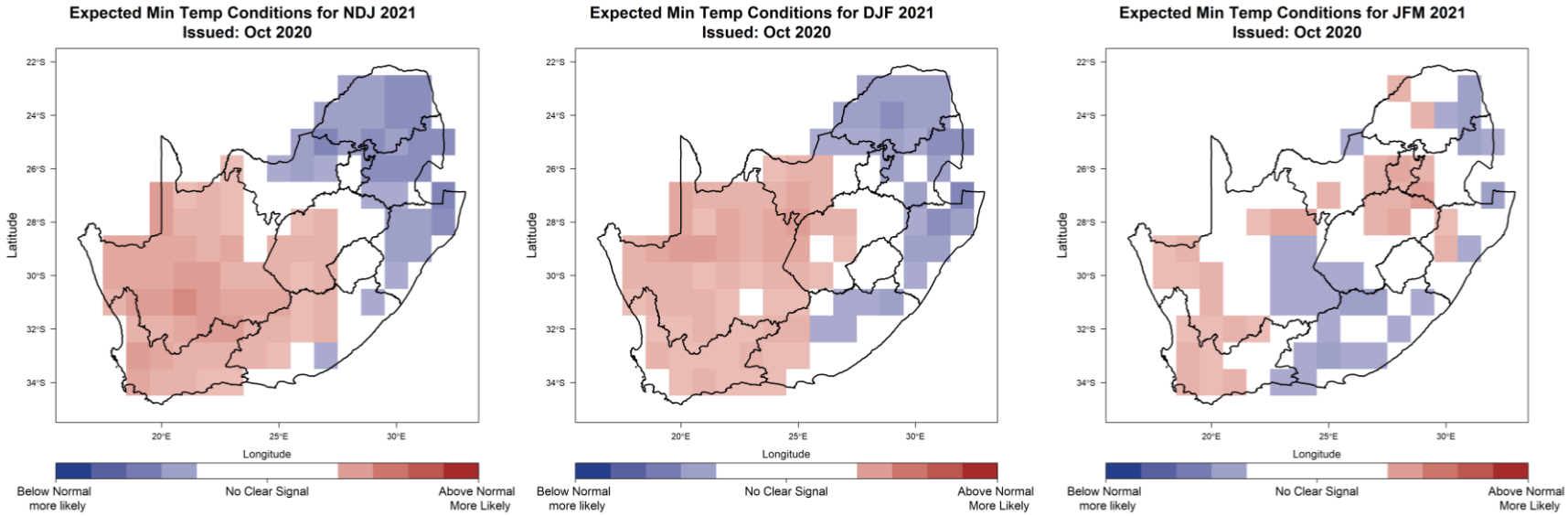

Figure 4: *November-December-January 2021 (NDJ; left), December-January-February 2021 (DJF; middle), January-February-March 2021 (JFM; right) seasonal minimum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

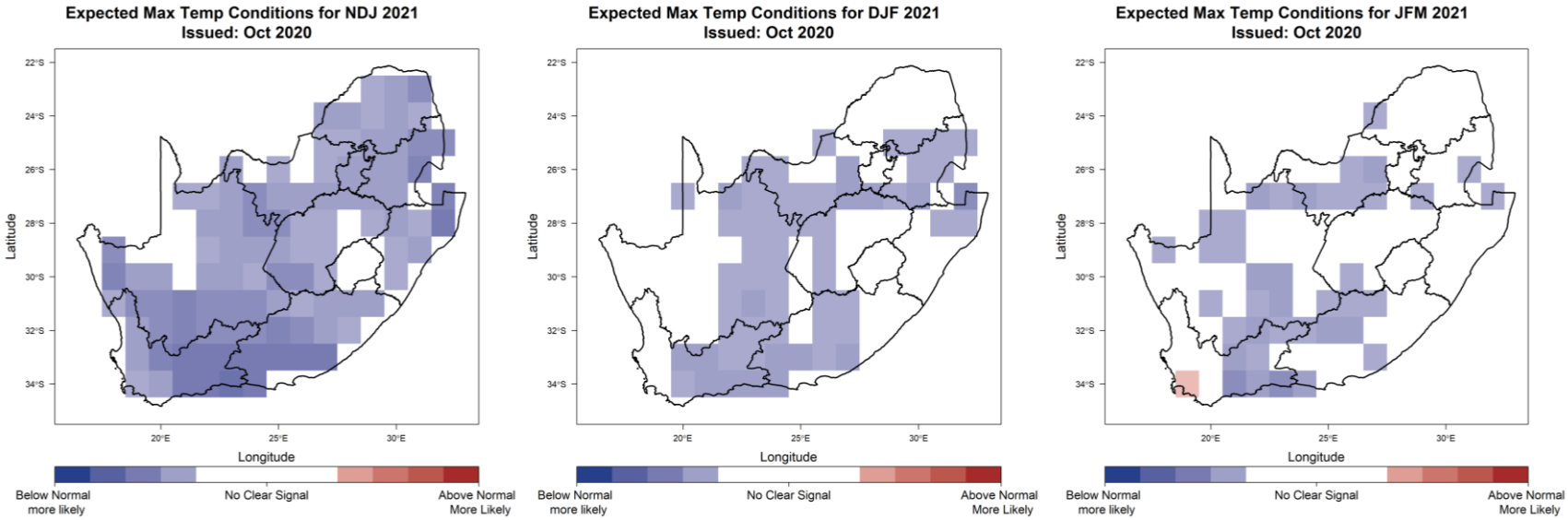

Figure 5: *November-December-January 2021 (NDJ; left), December-January-February 2021 (DJF; middle), January-February-March 2021 (JFM; right) seasonal maximum temperature prediction. Maps indicate the highest probability from three probabilistic categories namely Above-Normal, Near-Normal and Below-Normal.*

2.3. Climatological Seasonal Totals and Averages

The following maps indicate the rainfall and temperature (minimum and maximum) climatology for the early-summer (Nov-Dec-Jan), summer (Dec-Jan-Feb) and the late-summer (Jan-Feb-March). The rainfall and temperature climate is representative of the average rainfall and temperature conditions over a long period of time for the relevant 3-month seasons presented here.

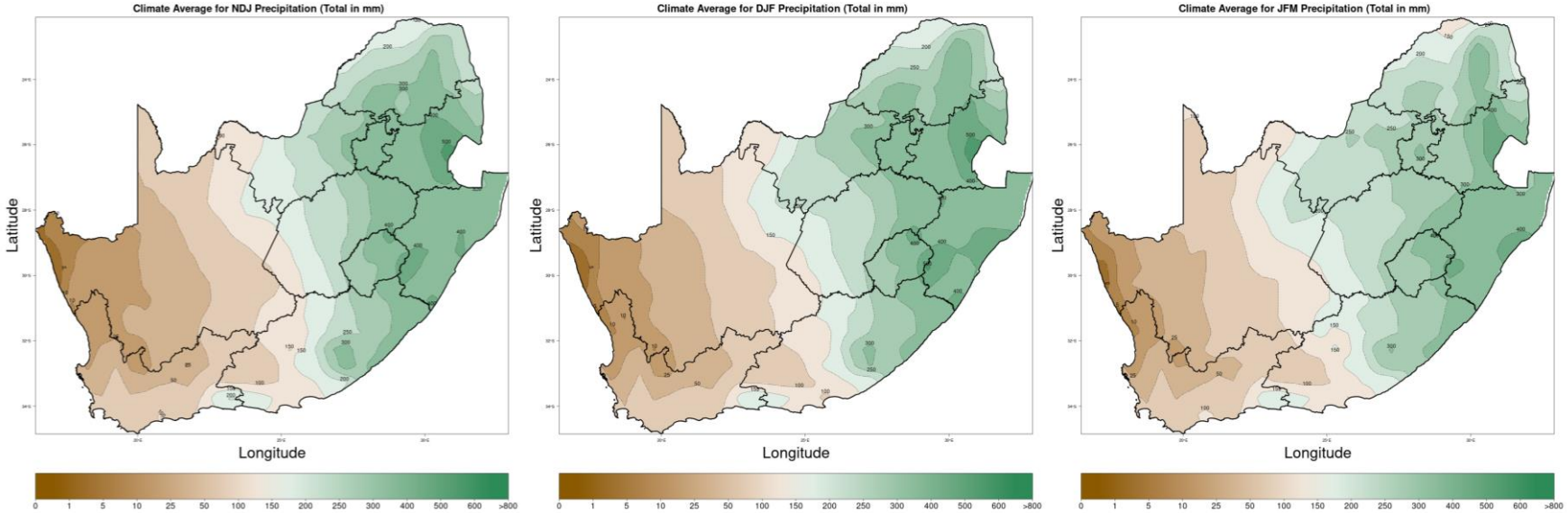

Figure 6: *Climatological seasonal totals for precipitation during November-December-January (NDJ; left), December-January-February (DJF; middle) and January-February-March (JFM; right).*

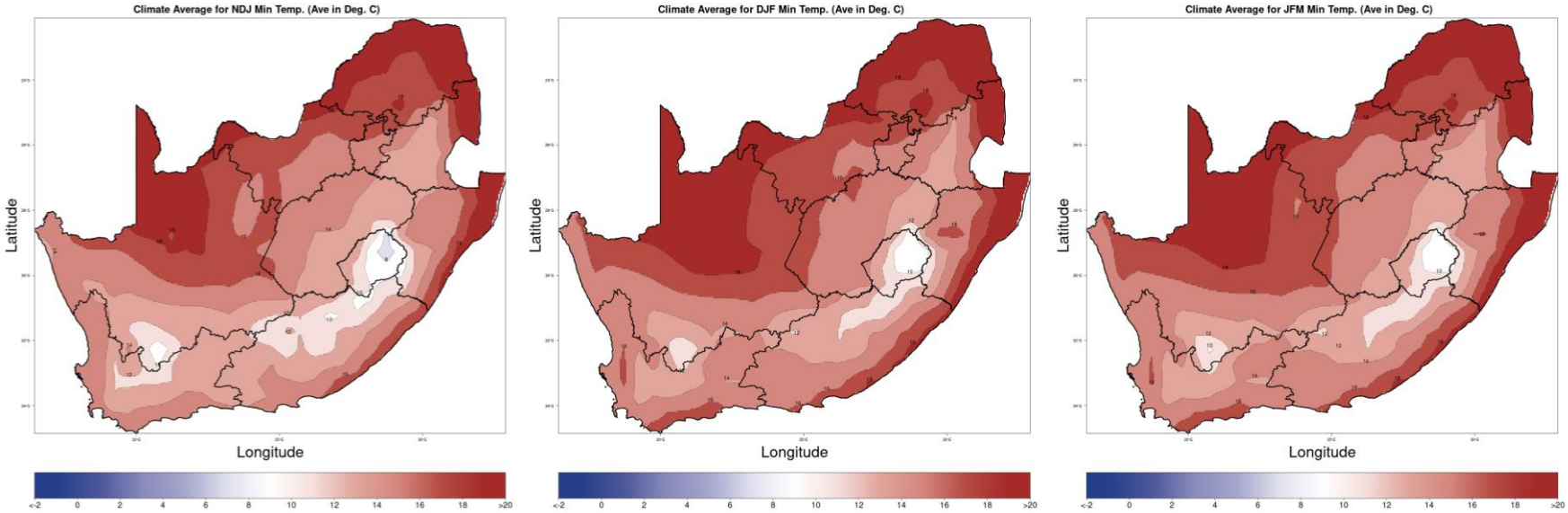

Figure 7: *Climatological seasonal averages for minimum temperature during November-December-January (NDJ; left), December-January-February (DJF; middle) and January-February-March (JFM; right).*

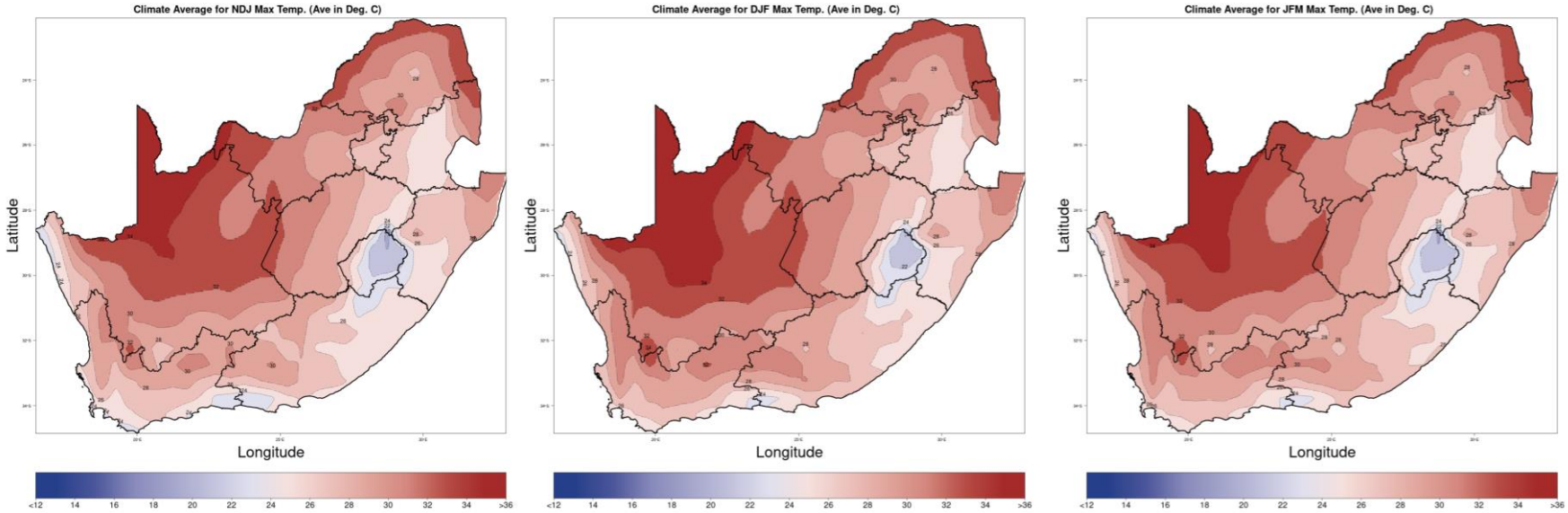

Figure 8: *Climatological seasonal averages for maximum temperature during November-December-January (NDJ; left), December-January-February (DJF; middle) and January-February-March (JFM; right).*

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3. Summary implications to various economic sector decision makers

Water and Energy

The anticipated above-normal rainfall across almost all provinces, with exceptions to KwaZulu-Natal, over the summer rainfall areas, provides a good opportunity for recovery of water reservoirs, bringing some relief to communities experiencing water shortages, like in Limpopo, Eastern Cape and some parts of the Western Cape provinces. The above-normal rainfall conditions also pose the risk of flash flooding and urban localized flooding, particularly in areas prone to flooding like in Gauteng and KwaZulu-Natal (particularly at the start of summer). Hence there is a need for citizens to watch out for short-term forecasts and warnings as the summer season progresses. The mostly above-normal rainfall forecasts may affect coal mining operations clustered in provinces such as Mpumalanga. The maximum temperatures are mostly below-normal, therefore there won't be any significant impact on demand for energy for cooling.

Health

The high probability of above-normal rainfall predicted across all provinces might lead to flooding. The likelihood of excess floodwaters to be contaminated with human or animal waste becomes high in areas with poor or inadequate drainage, and this can potentially increase the transmission of water-related vector-borne diseases. Malaria-endemic provinces (Limpopo, Mpumalanga and KwaZulu-Natal) might experience an increase in changes in mosquito abundance, which might elevate malaria transmission. The public is advised to take preventative measures such as protecting against mosquito bites which include the use of mosquito bed nets, wearing of clothes that cover most of the body, and use of insect repellent on exposed skin is recommended. The below-normal maximum temperatures predicted across the country might reduce direct and indirect health-related effects that result from high maximum temperatures, however, the public is advised to take appropriate sun protection measures such as staying in the shades and wearing protective clothing, particularly at noon.

Agriculture

The high probability of above-normal rainfall over the provinces of Limpopo, Free State, Gauteng, North-West, Eastern Cape, Northern Cape and Western Cape is likely to bring positive impacts for crop and livestock production. Decision makers may advise farmers to prepare land for planting, practice soil and water conservation, and establish good drainage systems. The seasonal forecast for KwaZulu-Natal province show generally above-normal rainfall at the start of summer, however indications of extensive below-normal areas during mid and late summer. The seasonal forecast for Mpumalanga province show mostly above-normal rainfall, with exception of southern parts which will experience below-normal during mid and late summer. As a result, the relevant decision makers are encouraged to advise farmers to adopt soil and water conservation practices and water harvesting and storage.

This forecast is based on existing conditions and there is always a possibility for the trends to change. Farmers are advised to keep monitoring the weekly and monthly forecasts issued by the South African Weather Service. In addition, farmers are also advised to keep on monitoring advisories from the Department of Agriculture and make changes as required.

4. Contributing Institutions and Useful links

All the forecasts presented here are a result of the probabilistic prediction based on the ensemble members from the coupled climate model from the South African Weather Service. Other useful links for seasonal forecasts are:

http://www.weathersa.co.za/home/seasonal (Latest predictions from SAWS for the whole of SADC)

https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/ (ENSO predictions from various centres)

https://iri.columbia.edu/our-expertise/climate/forecasts/seasonal-climate-forecasts/ (Copernicus Global forecasts)